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RESOURCE ALLOCATION, COMMODITY SUPPLY AND INCOME

DISTRIBUTION ASPECTS OF AGRICULTURAL

PRICING POLICY IN KENYA

by

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ABSTRACT

This research is an attempt to integrate in a microeconomic framework the practice of agricultural pricing on the one hand with the phenomena of African farmer response, commodity flow through the marketing network and economic balance across regions and over agents on the other hand. We shall attempt to answer the following basic and related questions: How is the price vector faced by farmers and commodity distribution agents determined, and how do they respond to it? How has marketing policy affected sectoral and regional economic balance? Is marketing policy consistent with the production, locational and income distribution strategy of the official development program?

Western Kenya, and in particular, Nyanza and Western provinces will be the major laboratory for obtaining most of the desired field data as the area produces my preferred crop combinations. In addition, published time series data and Kenya Government cross section farm survey data will be used. Several data analysis techniques will be employed including multivariate regression analysis to manipulate data to answer the above questions as well as to make some policy suggestions.

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1. Introduction

The correct ascertainment of the nature of decision making by economic agents resident in the rural areas of Kenya remains a conditio sine qua non for the success of the government's rural development program. Among the principal objectives of public policy in Kenya has been "the attainment of high and growing per capita incomes, equally distributed among the population".<sup>1</sup> Directly underlying this policy statement is the recognition that the rural sector is not having its "fair" share of the growth in welfare resulting from the expanding G.D.P. In pursuing this widely acclaimed rural development policy goal, controversy has centered on whether optimal qualitative and quantitative measures have been executed by government. Specifically, several questions are raised daily by farmers, consumers, government policy designers as well as by technical experts regarding the effect agricultural marketing policies have had or are likely to have on critical rural oriented development targets involving output mix, resource allocation and reallocation, the efficiency of commodity flow through the distribution network, group as well as regional participation in the generation and disposal of national income.

Needless to say, there are several facets to the problem of agricultural marketing but the pricing issue has more or less been central. For example, as is reported in the 1973 issue of Economic Survey in respect of cotton production in Western Kenya, "strenuous efforts over several years have failed to achieve the objective of substantial increase in production".<sup>2</sup> The report further asserts that the major explanatory factor has been the unfavourable rate of return

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1. Republic of Kenya, Development Plan, 1970-1974, Nairobi: The Government Printer, 1969. p. 2.

2. Republic of Kenya, Economic Survey 1973, Nairobi: The Government Printer, 1973, p.

to cotton vis-a-vis other crops given the relatively low level of producer prices paid by the Lint and Seed Marketing Board. A related issue was highlighted by a Sunday Nation report of an interview between a journalist, Mr. Jeremiah Muthoni and a prominent farmer in the Western Province, Mr. Eric Khasakhala. The farmer unequivocally stated that "the present prices of maize must be increased if the farmer is to make any gains following the increasing prices of fertilizers and farm machinery".<sup>3</sup> Furthermore, since the latter part of 1973, there has been this well reported paradox of maize shortage on the market in the light of surplus production acknowledged by the Maize and Produce Board. In response to this shortage, towards the end of 1973, the government took over the distribution of maize from private enterprise. In addition, on February 1st 1974, the producer price of maize was increased from 35 shs to 40 shs per 90 kg bag. Simultaneously, the consumer price went up from shs 76.50 to shs. 90 per 90 kg bag. Thus there is evidence to believe that the nature of agricultural commodity pricing may underly not only the problems of inter crop and inter regional resource allocation, but also the erraticism of commodity flow through the distribution networks.

## 2. Scope and Objective

We seek to determine certain micro-economic effects of price and other measures related to the marketing of the major crops that grow in Western Kenya, mainly Western and Nyanza Provinces and the adjoining districts of the Rift Valley Province (West Pokot, Trans Nzoia, Uasin Gishu, Nandi, Kericho, Nakuru and Narok). Because of this geographical choice, the range of crops is of interest and will include the cotton, maize, millet, tea, cassava, sugar, sunflower and wattle that are produced on African multi commodity farms.

With respect to each commodity, the first problem will be a searching analysis of the factors relevant in the decision to set a producer price and the relationship between this price and any other intermediate prices up to and including the domestic consumer price for each crop. Furthermore, the impact of domestic exports (if any)

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3. Sunday Nation, Nairobi, January 20, 1974 p.20.

on domestic consumer price will be investigated. Finally, the relationship between the marketing institutional arrangement and the price levels will as far as possible be delineated from the purely economic relationship between prices and market forces.

Having analysed the structure of the price vector that the multi product farmer faces, the next research objective is to analyse and quantify the nature of decision making by farmers with respect to the intensity of utilisation and inter crop allocation of factor inputs. This will necessitate performance of costing exercises as well as econometric estimation of supply functions and supply elasticities.

In addition to inter crop resource allocation, another major thrust of the study will be in the area of incentives to supply or otherwise withhold commodity (hoard) at various stages in the marketing cum processing network. Stocks policy will be appraised and the overall efficiency of the marketing chain will be evaluated in the light of some a priori standards as well as in the light of the experiences of other countries with similar arrangements.

Because of ecological heterogeneity across Western Kenya, different crop combinations are found in different areas. However, to the extent that farmers react to differentials in economic returns offered by different undertakings, these crop combinations across regions may also be a product of policy. A final objective of the research therefore, will be an assessment of the effect marketing policy may have had or is likely to have on the location of economic activity and the distribution of income and welfare within Western Kenya. We shall in the end evaluate analytically and empirically the consistency, adequacy and efficacy of existing marketing related policy instruments as well as past policy measures in achieving the rural developmental objectives embodied in the existing Government Plan.

Given the foregoing objectives, it is clear that the study is quite wide ranging with respect to the products and more so with respect to the issues involved. From a strategy point of view, the study will be a four phase exercise centering initially on determination of the structure of prices. Thereafter, interest will shift to farmers' decision making and response. Then, focus will shift to the efficiency of commodity flow and finally to the

distribution aspects of marketing policy. Each phase is potentially self contained. After collection of the necessary data, the analysis will be manipulated in such a way as to test the hypotheses outlined below. Like the basic structure of this study, the hypotheses underlying the research can be conveniently subdivided into four but related groups; hypotheses about determination of prices; about the response of production and resource allocation to prices; about the efficiency of the commodity distribution network and hypotheses about income distribution.

a. Prices

- (i) Producer prices are so substantially lower than actual and potential consumer prices that the distribution agents get a disproportionate margin of the value of commodity production thereby acquiring a more than fair share of economic power over producers and consumers;
- (ii) Because of a very inelastic domestic demand for food commodities, and because of the disproportionate economic power distribution agents have over farmers and consumers (hypothesis a (i)) there is speculation within the marketing network such as may continually force consumer prices above the "controlled" price level.

b. Marketing Network

The marketing system can provide strong enough economic incentives to counteract individual and institutional interests that may be contributing to the widely experienced inefficient flow of commodities through the internal distribution network which may have caused periodic shortages.

c. Resource Allocation

Interference by the marketing authorities in commodity price determination may have distorted relative prices such as to cause inter commodity as well as inter regional factor transfers within Western Kenya, including rural to urban labor migration.



d. Income and Welfare Distribution

The marketing and pricing of agricultural products produced in Western Kenya may be inconsistent with the over all rural development and income redistribution goals.

Each of these hypotheses implies the existence of an alternative competing hypothesis that just says the opposite. These must be born in mind.

3. Inventory of Past Related Studies in Kenya.

The subject of agricultural pricing and marketing in Kenya has been an area of active research and frequent official commissions of inquiry. Because of its overwhelming importance as a staple food for the majority of Kenyans, maize pricing and marketing attracted most of the initial research resources. In a set of related articles, H. Karani,<sup>4</sup> then Karani, Massell and Heyer<sup>5</sup> asserted that the unique nature of the maize pricing and marketing problem stems from three facts: (i) the price inelasticity of domestic demand for maize, (ii) the high probability of seasonal variations in supply due to erratic changes in the weather and (iii) a high volume to value ratio. These three characteristics jointly make importation of maize and the export of maize very uneconomic. It also makes the balancing of supply and demand and the determination of an optimal inventory policy a razor edge-type equilibrium exercise.

The coverage of research in marketing soon expanded to include crops like beans, english potatoes, bananas, rice and wheat. In their study, V. Alvis and Peter Tenu covered the marketing of maize, beans, English potatoes and bananas.<sup>6</sup> A 1968 study by T.J. Aldington

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4. Karani, H. "Pricing and Marketing of Maize in Kenya". Discussion Paper No. 19. Institute for Development Studies, University of Nairobi, Dec. 1965.

5. Massell, B.F., Heyer, J., and Karani, H., "Maize Policy in Kenya" Discussion Paper No. 20. Institute for Development Studies, University of Nairobi, Dec. 1965.

6. Alvis, V. and Tenu, P., "The Marketing of Selected Food Crops in Kenya Comprising Maize, Beans, English Potatoes and Bananas". Discussion Paper No. 39B. Institute for Development Studies, University of Nairobi Dec. 1966.



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and L.D. Smith dealt with the marketing of rice.<sup>7</sup> The results of this era of research are summed up in a 1971 paper by Lawrence D. Smith.<sup>8</sup> In this paper, he expressed scepticism about the usefulness of continued future research in the area of agricultural pricing and marketing as each study seemed to come to the same conclusions. The researchers seemed to all agree that colonial agricultural policies "had distorted the pricing mechanism, resource allocation and income distribution in the economy. Consequently, the policy prescriptions recommended as summed up by Smith are:

- (i) Producer prices should be at that level which equilibrates supply and domestic demand, or at the export parity level if domestic demand is satisfied at the export parity price;
- (ii) Marketing costs, should be kept to that level consistent with providing different groups of consumers with the services they choose to demand;
- (iii) Consumer prices should be related to producer price plus marketing costs. Consumers should not be expected to subsidise export losses, nor should monopolistic pricing practices be allowed if they affect the welfare of domestic consumers.\*

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7. Aldington, T.J. & Smith, L.D., "The Marketing of Rice in Kenya" Discussion Paper No. 74, I.D.S. Univ of Nairobi, Nov 1968.

8. Smith, L.D. "Some Possible Policy for Kenyan Agriculture" I.D.S. Discussion Paper No. 48, Univ of Nairobi May 1971.

Finally, Smith recommended research in the areas of sugar pricing, milk pricing, transportation pricing and the merits of the self sufficiency goal of Kenyan agricultural policy. He further suggested that the goals of research should be beyond resource allocation into such areas as effects of agricultural policy on income distribution and on regional population balance.

Since his suggestions were made, studies by several I.D.S. members have been undertaken and others are still in progress related to equity and rural/urban economic balance. There is active research in the area of the nature of economic processes including economic decision making in the rural agricultural and rural commercial enterprises. However, there still is a relative dearth of empirical evidence regarding economic decision making in the rural sector and in particular how this could be affected by policy administration or how it should affect policy design. Notable advances along these lines have been the work of J. Maitha on Coffee Production in Kenya<sup>9</sup>, and Etherington's Econometric analysis of smallholder tea production<sup>10</sup>. The latest contribution in the field has been the work of Jerome Morris Wolgin in his econometric analysis of farmer response to price in smallholder agriculture in Kenya under conditions of uncertainty.<sup>11</sup> Current shortages of staple cereals in the light of reported excessive production and overstrained storage facilities also suggest further research in the efficiency of internal distribution including storage or inventory policy. Finally, there is a need to look at the production, marketing and distribution problems in an

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9. Maitha J.K. "Productivity Response to Price of Kenya Coffee". Eastern African Economic Review, Vol. 2, No.2, 1970. Also Maitha, J.K. "A Supply Function for Kenya Coffee" Eastern Africa Economics Review, Vol. 1, No. 1, June, 1969.

10. Etherington, An Econometric Analysis of Smallholder Tea Production in Kenya : (Nairobi: East African Literature Bureau, 1973).

11. Wolgin, J. Farmer Response to Price in Smallholder Agriculture in Kenya: An Expected Utility Model. Ph.D. Dissertation, Yale University, 1973.

integrative framework even if this may necessitate narrowing down the horizontal coverage of this study. Such a general equilibrium type approach would not only utilise the existing results of partial equilibrium analysis undertaken in previous research but might also underscore the simultaneous nature of the production, marketing cum distributional problem.

#### 4. The Data Base and Data Analysis

The analysis will utilize both time series and cross section data. There will be two major sources of cross section data; the field survey data that will be collected as part of this study and existing data that was collected by the Kenya Government in a survey of 1500 farms throughout the country. This Government survey consisted of monthly visits to each farm as well as the collection of data at the beginning and end of the survey period. These data include all inputs, outputs, inventories, prices, capital value etc., by crop and by farm. The survey part of the present study will consist of scheduled as well as unscheduled field interviews of a sample of farmers, marketing and distribution agents and public officers in the ministries of agriculture and Planning. The sample of farmers and distribution agents will be determined on the basis of combined stratified and random sampling techniques. A simple questionnaire as well as taped and untaped oral interviews conducted by me and research assistants will be used to elicit the necessary information.

The time series data will consist mainly of the information published by various organs of the Government ministries and parastatal agencies especially in the Ministry of Finance and Planning, the Ministry of Agriculture, the Labour Department and the relevant Marketing Boards. Finally, the research will also draw on the resources of related projects completed before this study.

Techniques of data analysis will be decided upon in the light not only of the type of questions that are under investigation but also in the light of the nature of the data that will be assembled. Multivariate correlation analysis will be employed and alternative estimation procedures will be tried in measuring various response coefficients implied by the specification of the models.

## 5. Conclusion

One of the fundamental criticisms raised against the process and mechanism of planning in India at the 1967 conference held at the University of Sussex was that the Indian planners overemphasised the big aggregates of heterogeneous items and neglected details and concrete analysis of social and economic microcosms. This criticism articulated in the book, Crisis in Indian Planning<sup>12</sup> can very well be made of planning in a number of African countries. Yet very often, planners get caught up with aggregates because there is not enough microdata particularly on the less easily measurable factors such as in the area of agriculture, where very detailed field research is needed to predict responses to expenditures. This underlines the importance of a micro oriented research project such as this for the results can well test the efficiency of resource allocative mechanisms in the light of the goals of government policy. In the field of pricing, if the marketing arrangement has depressed producer prices, then if supply elasticity is positive, crop production will become inefficient because otherwise efficient inputs, including labour are discouraged at the margin. If such downward pressure on producer prices is a result of government export taxation, this raises the possibility that an income tax or a land tax may be more efficient taxes much as they may serve to decrease the use of capital in agricultural production. By attempting to determine how much the marginal product of land or labour is reduced (i.e. how many individuals or how many acres of land must leave the production of one crop whose producer price is artificially held down before the marginal product of each acre is equal to what it would have been in the absence of institutional interference with price setting) you have a cet par indication of how much labour or land in the production of that crop has been driven out by the phenomenon that producer price is set below its natural level. If there are other products which are almost as profitable and whose prices are not depressed by the marketing institutional set up,

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12. Streeten, Paul et.al. Crisis in Indian Planning, Oxford University Press, London, 1968.

the marketing arrangement will cause a shift among outputs. From a regional analysis point of view, if the urban centres offer real or imaginary employment alternatives, agricultural price setting policy may accentuate the already phenomenal rural to urban migration. If we accept the traditional classification of "cash crop" and "food crop" production on African farms,<sup>13</sup> then food products on the farms may be wage goods. In that case, therefore, there may be a potential problem with the terms of trade between cash crops and food crop production as long as there is a trade-off between the two categories of crops. If higher prices of cash crops lead to lower outputs of foodstuffs and hence higher food prices and hence reduce flows of labour to industry, then theoretically there might be reason to depress cash crops prices to augment this flow. But in a country like Kenya, population flow into the cities is already a problem and such pricing policy would be inoptimal. In any study of these and other related very important issues, problems of price determination within the marketing network and farmer responses to economic stimuli are very central and they therefore form the backbone of this research.

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13. An increasing number of African Economists correctly believe that such classification has no analytical basis as the cash earning roles of "food" and "cash" crops are interchangeable. For a quick summary of the arguments see Alibaruho, George. Effects of Marketing Board Policies on Prices, Production and Income in Uganda's Cotton Industry. Ph.D. Dissertation, University of California, Berkeley, 1973.



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